

# Low Noise Amplifier

## 12.75 - 14.75 GHz



CGY2232UH/C1

Rev. V1

### Features

- Gain: 24 dB
- Noise Figure: 1.3 dB
- Drain Voltage Supply: 3 V
- Drain Current: 24 mA
- 50  $\Omega$  Input & Output Matched
- Chip Size: 3.25 x 1.8 mm
- Tested, Inspected Known Good Die (KGD)
- Space and MIL-STD MMICs
- RoHS\* Compliant

### Applications

- Radar
- Telecommunication
- Instrumentation

### Description

The CGY2232UH/C1 is a high-performance GaAs low noise amplifier MMIC designed to operate in the Ku-band. This device is a 3-stage low noise amplifier with a low power consumption. It can be used in a spacecraft application.

The die is manufactured using a high performance 0.13  $\mu\text{m}$  gate length GaAs D01PH for ultra low noise and medium power amplification which is registered in the European Preferred Part List. The MMIC uses gold bonding pads and backside metallization and is fully protected with silicon nitride passivation to obtain the highest level of reliability.



### Ordering Information

Part Number	Package
CGY2232UH/C1	die

1 \* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

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**Electrical Specifications: Measured On Wafer,**  
**Freq. = 12.75 - 14.80 GHz,  $V_D = 2.7 - 3$  V,  $I_{DQ} = 24$  mA,  $T_A = +25^\circ\text{C}$**

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Small Signal Gain	—	dB	20	24	—
Gain Flatness	—	dB	—	$\pm 0.5$	—
Noise Figure	—	dB	—	1.3	1.7
Input Return Loss	50 $\Omega$	dB	—	30	—
Output Return Loss	50 $\Omega$	dB	—	40	—
P1dB	Output Power Input Power	dBm	0 —	— -20	—

### Absolute Maximum Ratings<sup>1,2</sup>

Parameter	Absolute Maximum
Supply Voltage	-1 V to +6 V
Junction Temperature	+150°C
Operating Temperature	-40°C to +85°C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.

### Thermal Characteristics

Parameter	Absolute Maximum
Thermal Resistance	70°C/W

### Biasing Pads

Pad	State << OFF >>	State << ON >>
GND	—	—
VD1	0 V	3 V
VD2	0 V	3 V
VD3	0 V	3 V

### Handling Procedures

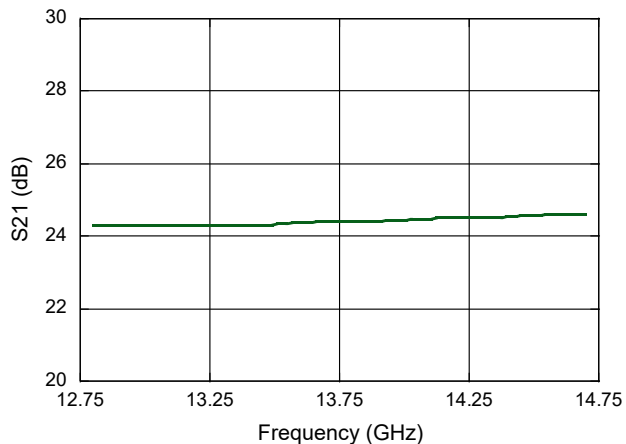
Please observe the following precautions to avoid damage:

### Static Sensitivity

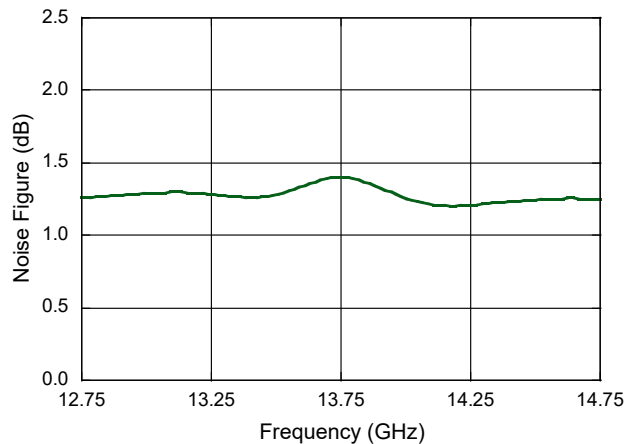
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

**Typical Performance Curves: On Wafer Measurements**

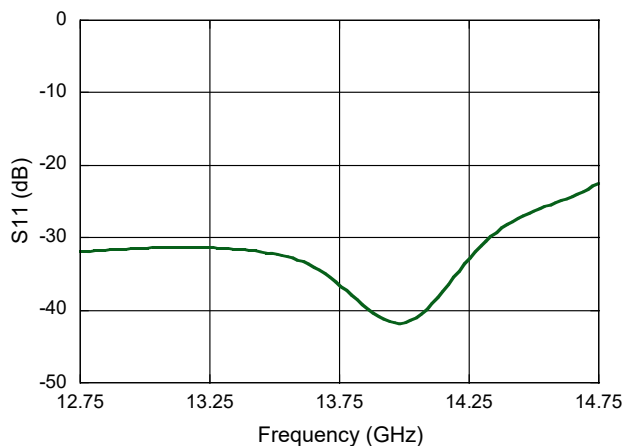
**Gain**



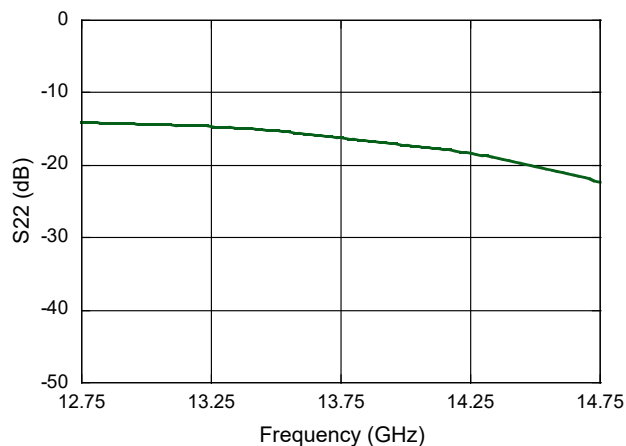
**Noise Figure**



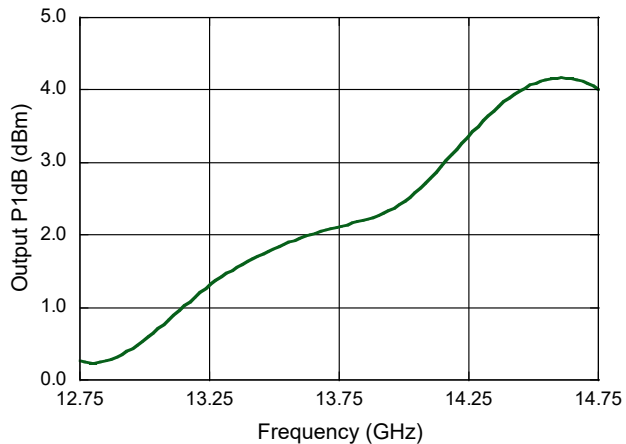
**Input Return Loss**



**Output Return Loss**



**Output P1dB**



### Application Schematic

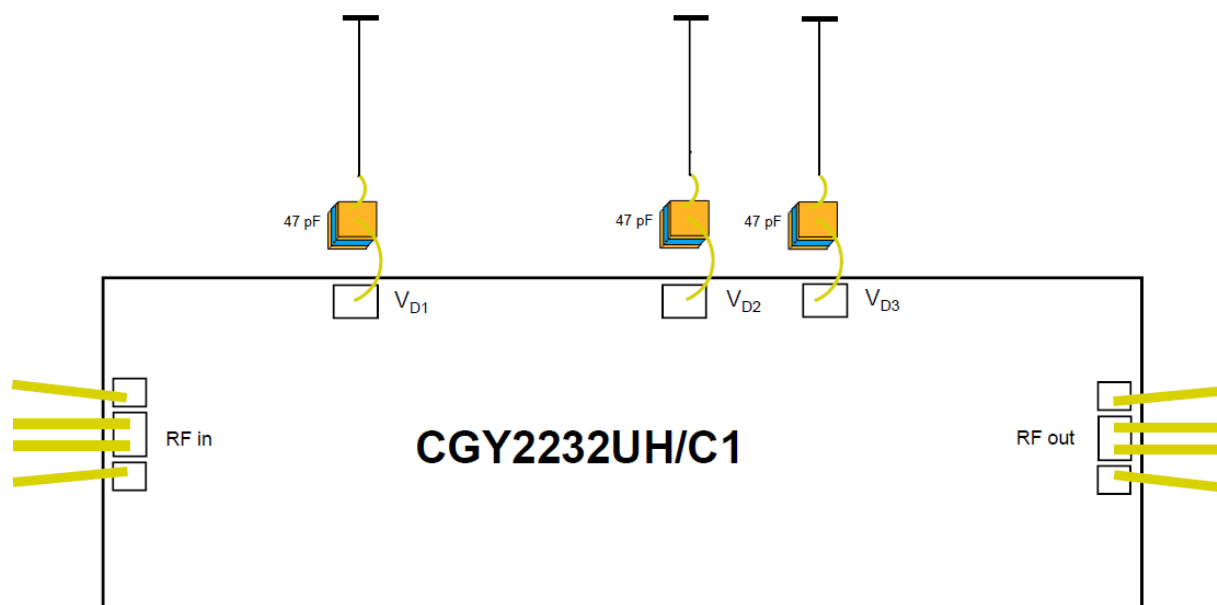
To prevent instability of the customer design it is highly recommended to place small chip capacitors as near as possible to the CGY2232UH on VD1, VD2, VD3, here 47pF is recommended.

### Soldering

To avoid permanent damages or impact on reliability during soldering process, die temperature should never exceed 330°C.

Temperature in excess of 300°C should not be applied to the die longer than 1 min.

Toxic fumes will be generated at temperatures higher than 400°C.



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